

Water quality treatment BMP options may be required if operational or basic structural source controls do not adequately address pollutant discharges from your site. Source control BMPs, as presented in Chapter Three, must always be implemented before treatment BMPs are considered.

The following information describes some basics of water quality treatment systems/facilities. Design and construction details can be found in the King County Surface Water Design Manual (which contains relevant information for the treatment BMPs discussed). A private vendor specializing in the treatment system or an engineering consultant can also provide information on treatment systems. All of these systems require regular inspection and maintenance in order to function properly.

Businesses and agencies are allowed to select a treatment BMP other than those presented in this manual if they follow the adjustment process as outlined in the King County Surface Water Design Manual and obtain approval from the King County Water Quality Compliance Unit.

Table 5.2 presents a brief description of some typical water quality treatment BMPs. Table 5.3 presents water quality treatment BMPs for removing specified pollutants. One treatment BMP usually cannot treat all pollutant problems. Each BMP is designed for a specific purpose and is capable of removing only specified pollutants. If you decide to install a water quality treatment BMP, always ensure that it is removing the pollutant of concern from your site runoff.

TABLE 5.2 WATER QUALITY TREATMENT BMPs

Treatment BMP	Brief Description
<i>Oil/Water Separator</i>	An underground vault specifically designed to remove oil and grease. Also will remove floatable and some settleable solids.
<i>Catch Basin Insert</i>	A filtering device that is installed within an existing catch basin and uses various sorbent materials and settling space to collect pollutants.
<i>Catch Basin Sump and Vault Filter</i>	A device similar to catch basin inserts, only larger and placed underground.
<i>Leaf Compost Filters</i>	A filtering device that is installed above or below ground and uses leaf compost to remove pollutants from stormwater.
<i>Wet Pond, Constructed Wetland, Wet Vault</i>	A wet pond is a stormwater pond that retains a permanent pool of water. A constructed wetland is similar to a wet pond, but shallower and supporting wetland vegetation in large areas. A wet vault is an underground, covered, engineered structure that retains a permanent pool of water.
<i>Vegetated Biofilter – Biofiltration Swale and Filter Strip</i>	A biofiltration swale is a long, gently sloped ditch or depression designed to treat water as it passes through the vegetation. Grass is the most common vegetation. A filter strip is a grass area, wider than biofilters, also with gentle slopes. Water usually enters as sheet flow from the adjacent pavement.
<i>Sand Filter</i>	A structure placed in the landscape, with grass grown on top, or in vaults. Stormwater passes through the sand allowing particulate pollutants to be filtered out.
<i>Infiltration</i>	A normally dry basin which temporarily stores stormwater until it soaks through the bottom and sides of the basin, and infiltrates into surrounding soil.
<i>Chemical Treatment</i>	See the King County Design Manual for allowable chemical treatment including chitosan and alum and CO2 sparging.

TABLE 5.3 APPROPRIATE USES FOR WATER QUALITY TREATMENT BMPs

Pollutants To Remove	Appropriate Treatment BMPs
<i>Oil/Grease</i> Sources: vehicle and equipment areas, industrial areas, food preparation	Oil/water separators; catch basin inserts; catch basin sump/vault filters, leaf compost filters.
<i>Sediments/Solids</i> Sources: sand/gravel storage, construction sites, unpaved areas, agriculture/livestock uses	For coarse sediments – wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter; catch basin insert; catch basin sump/vault filters; leaf compost filters. For fine sediments – wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter. Also see catch basin sump/vault filters, chemical treatment.
<i>Phosphorus Compounds</i> Sources: detergents/cleaners, fertilizers, organic matter, animal wastes	For particulate phosphorus – wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter. If dissolved phosphorus must also be removed – a large “oversized” wet pond or sand filter.
<i>Nitrogen Compounds</i> Sources: fertilizers, animal wastes, organic matter	For particulate nitrate – wet pond/vault; constructed wetland (with forebay); vegetated biofilter; sand filter. For dissolved nitrate – constructed wetland.
<i>Metals</i> Sources: industrial areas, vehicle and equipment areas, paints, pesticides	For particulate metals – wet pond/vault; constructed wetland (with sediment forebay); vegetated biofilter; sand filter. For dissolved metals – leaf compost filter or constructed wetland.
<i>Fecal Coliform Bacteria</i> Sources: animal wastes; fertilizers	There is no treatment BMP that can reliably reduce fecal coliform bacteria to acceptable levels. Some studies have shown constructed wetlands provide some benefit.
<i>pH</i> Sources: metal plating, printing/graphic industries, cement/concrete production, cleaners	A constructed wetland can neutralize some ranges of pH.
<i>BOD and Trace Organics</i> Sources: organic debris, food wastes, some chemical wastes	For particulate BOD – see “particulate nitrate” above. For dissolved BOD – A constructed wetland will remove some dissolved BOD and trace organics; more reliable performance requires activated carbon.